SUBJECT INDEX

Adenylate/chlorophyll ratio 358
  summer upwelling 364
Animal kingdom, phylogenetic tree 89
ATP, microbial in summer upwelling 365

Bacteria
  plankton interaction 362
  zooplankton 366
Bathymetry, sandbanks 145, 146

Circulation, summer upwelling 267–310
  current meters 269
  data sources 272–4
  Gulf Stream influence 287–91
  instrument configuration 270
  low-frequency variability 278–87
    along-shelf adherence 284–6
    cross-shelf coherence 284, 285
    mid-shelf 281–4
    outer shelf 278–80
  mean current 276, 277
  mean flows 275
  modelling 313–27 *see also* Modelling
  momentum balance 294–307
  temperature profiles 277
  volume transports 308
  wind forcing effects 292–4
Current meter stations, self-recording 143

Echinoderms
  classes 91, 92
    number 100
  genera number 100
  larvae 92–100
El Niño
  atmospheric pressure anomaly 63
  equatorial conditions 69
  importance 62
  phenomena 67–70
  post-, conditions 76
  pre-, conditions 64–6
  rainfall 78, 79
  sea surface conditions 69
  windfield 77–9
El Niño, 1982/83
  buoyancy profiles 43
  data sources 2–5
  density profiles 43
  equatorial conditions 72–4
  equatorial sections 38–40
  hydrography, Eastern Pacific 1–47
  isopycnal depth deviation 44
  salinity sections, 5°S 24–31
  salinity sections, 10.5°S 31–8
  salinity sections, 85°W 13–23
  sea surface temperature 71–3
  temperature sections, 5°S 24–31
  temperature sections, 10–5°S 31–8
  temperature sections, 85°W 5–13
  thermal profile 72, 75
Empirical Orthogonal Function (EOF) 331
Enteropneusta, larvae 92–100
Evaporation–precipitation balance 58–61

GABEX II
  cold intrusions 330
  current meter array 269
  mean current 276, 277
  study area 228
  wind events 236
Galapagos, temperature sections 6
Genetic transfer
  implications 112–14
  larvae 90, 109–12
Georgia Bight, summer upwelling 330–51
  analysis 338–47
  gauges used 332, 333
  large-scale windstress 336–8
    phase-coherence 337, 338
  map 331
  methods 334–6
  moorings used 331, 332
  time-series windstress 347

Hodograph, currents 339, 342, 344
Hydrography, summer upwelling 231–65
  carbon production 264, 265
  events 236
  intrusion events 242, 246
  nitrate concentrations 244, 245
  nitrate cross-shelf sections 248, 249
  nitrate integrated 260, 264
  nutrient distribution 253
  nutrients intruded 259–65
  nutrient plots 257–9
  phosphate integrated 261
  potential energy 251–3
  sampling 233
  silicate integrated 262
  study area 234
  surface and bottom currents 237–40
  surface and bottom temperatures 237–41
  temperature cross-shelf sections 248–50
  temperature–salinity plot 254, 255
  variability, St. Augustine section 243
  vertical profiles 246, 247
  windspeed 235

Intrusions, characteristics 438
Invertebrate life-histories 87–114

Larvae *see also* Zooplankton
  adult incongruence 104
  bipinnaria 95
  invertebrate life-histories 87–114
  'Kirk's' ophiuromorph 98
  pluteus 94, 97
    echinoderm class 100–4
  trochophores 105–9
Longshore shelf variation 179–213
  bends 198, 200
  contour divergence 202, 203
  depth profiles 203–7, 218–20
  dispersion curves 193
  forced shelf motion 194–8
  formulation 181
  Kelvin waves 186–91
    perturbation 215
  ocean modes 186–91
  ocean-shelf separation 182–6
  radial depth contours 200–2
  Rockall slope current 210
  scattering 209
  shelf-edge diurnal tides 211, 212
  shelf motion 203–7
  shelf waves 192
  slope current 180, 194
  'tunnelling' 218–20

Microorganisms
  Gulf Stream intrusions 369
  plankton interactions, summer upwelling 353–70
Modelling, circulation 313–27
  alongshore pressure gradient forcing 324, 325
  experiments 320–5
  model description 314, 316–20
    lower layer 316
    upper layer 317–20
  summer upwelling 313–27
    map 315
  wind driven upwelling 321–4

Pacific Ocean, eastern tropical, Chart 3
Pacific Ocean, tropical
  climatic variation 49–82
  evaporation–precipitation balance 58–61
  fresh water thickness 61
  ocean–atmosphere relations 53–5
  sea surface temperature and atmosphere 57, 58
  thermal balance 56, 57
  western, heat pool 53
  wind influence 61
Particulate matter, summer upwelling 373–400
  changes with time 399, 400
  chlorophyll *a* distribution 379–96
  current meters 377, 378
  hydrographic stations 376
  intrusion events 378–83
  longevity 398
  major intrusions 375
  nitrate distribution 379–86, 396
  phaeopigment distribution 394, 395, 397
  sampling 374, 375
  temperature distribution 379–86, 396
  trajectories 396
Patch formation
  phytoplankton 378, 379
  zooplankton 403–34
Plankton interactions
  and bacteria 358, 359
  chlorophyll *a* distribution 356, 357
  doliolids 360
  patches 378, 379
  salps 359, 361
  sampling 355
  summer upwelling 353–70

Salinity sections
  eastern Pacific 13–38
  equatorial 38–40
Sandbank formation 117–72
  analysis 140–5
    bedload transport 141
    sedimentology 140–3
  bathymetry 145, 146
  bedform 146–9
  equations of motion 122–4
  flow pattern scheme 168
  grain size 149–51
  groups and location 120
  hydrodynamics 122–8
  lateral migration 131–5
  mechanisms 128–39
  megaripples 150
  near-bed current speed 155–8
  residual currents 161, 162
  sand transport paths 170, 171
  sand transport predictions 163–8
  shear stress 164, 165
  shoreface detachment 133
  sorting coefficient 152
  spiral flow 128–30
  stability model 130, 131, 137
  tidal current ellipse 159
  tidal flow 124, 125
  tidal stirring 136
  vorticity 126–8
  water circulation 154
Scarweather sands, map 121
Ships-of-opportunity network 52
Summer upwelling, southeastern USA 221 *see also* individual topics
  air–water temperatures 222
  bottom temperatures 225
  circulation 267–310
  circulation modelling 313–22
  history 221
  hydrography 231–65
  motions, Georgia Bight 329–51
  particulate distribution 373–400

plankton interactions 353–70
study area 227, 228
wind effects 223
zooplankton 403–34
SURTROPAC programme 49
methods 51

Temora turbinata see also Zooplankton
copepodid stages 411, 428–30
Temperature sections
eastern Pacific 5–38
equatorial 38–40

Upwelling, chain of events 439

Windstress, large-scale 336–8

Zooplankton
bacteria interaction 365
collection 356
copepod distribution 410, 411
current meter moorings 406
doliolid distribution 411, 420, 421, 432
naupli distribution 414, 415
Oithona sp distribution 417, 419
Oncaea sp distribution 418, 419
patch formation 422–7
Temora sp 423–6
sampling 405
summer upwelling 403–34
Temora turbinata distribution 413–15
temperature, near bottom distribution 407–9
vertical distribution 412–21